Application No. 09/772,662   Customer No. 01933
Response to Office Action

Listing of Claims:

Claims 1-4 (Canceled).

5.   (Currently Amended) ~~The~~ An imaging apparatus ~~according~~
~~to claim 3,~~ comprising:

an imaging device which includes a plurality of pixels
arranged two-dimensionally, and which outputs an imaging signal;

5   dark output level detecting means for detecting, for each of
the plurality of pixels, a dark output level superposed on the
imaging signal;

dark output correction means for correcting the imaging
signal based on the detected dark output level, and for setting a

10   clip level for a subject component of the imaging signal, based
on the detected dark output level; and

test imaging means for capturing a test image by performing
a charge storage and readout operation of said imaging device for
a test imaging time while shielding said imaging device from

15   exposure;
wherein the dark output level detection means detects the
dark output level by deriving a dark output level of an actual
imaging based on said test imaging time, an imaging device output
level obtained by said test imaging means, and a charge storage

20   time for exposure control of the actual imaging; and

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wherein the test imaging time and the charge storage time at
of the actual imaging time are different from each other, and the
dark output level at of the actual imaging time is derived by
multiplying the imaging device output level X obtained by said

25   test imaging means by a ratio Y/Z of the test imaging time Y of

said test imaging means to the charge storage time Z for exposure
control at the actual imaging time.

6.   (Currently Amended) The imaging apparatus according to
claim 5, wherein the test imaging time is shorter than the charge
storage time at of the actual imaging time.

Claims 7-9 (Canceled).

10.   (Currently Amended) The An imaging apparatus according
to claim 8, comprising:
     an imaging device which includes a plurality of pixels
arranged two-dimensionally, and which outputs an imaging signal;

5   dark output level detecting means for detecting, for each of
the plurality of pixels, a dark output level superposed on the
imaging signal;
     dark output correction means for correcting the imaging
signal based on the detected dark output level, and for setting

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10   an effective gain for a subject component of the imaging signal,

        based on the detected dark output level; and

                test imaging means for capturing a test image by performing

        a charge storage and readout operation of said imaging device for

        a test imaging time while shielding said imaging device from

15   exposure;

                wherein the dark output level detection means detects the

        dark output level by deriving a dark output level of an actual

        imaging based on said test imaging time, an imaging device output

        level obtained by said test imaging means, and a charge storage

20   time for exposure control of the actual imaging; and

                wherein the test imaging time and the charge storage time ~~at~~

        of the actual imaging ~~time~~ are different from each other, and the

        dark output level ~~at~~ of the actual imaging ~~time~~ is derived by

        multiplying the imaging device output level X obtained by said

25   test imaging means by a ratio Y/Z of the test imaging time Y of

        said test imaging means to the charge storage time Z for exposure

        control at the actual imaging time.

        11.   (Currently Amended) The imaging apparatus according to

        claim 10, wherein the test imaging time is shorter than the

        charge storage time ~~at~~ of the actual imaging ~~time~~.

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12. (Currently Amended) ~~The~~ An imaging apparatus ~~according to claim 7,~~ comprising:

an imaging device which includes a plurality of pixels arranged two-dimensionally, and which outputs an imaging signal;

dark output level detecting means for detecting, for each of the plurality of pixels, a dark output level superposed on the imaging signal; and

dark output correction means for correcting the imaging signal based on the detected dark output level, and for setting an effective gain for a subject component of the imaging signal, based on the detected dark output level;

wherein a value of the effective gain set by said dark output correction means is determined based on a resultant value obtained by dividing "~~a~~ (i) a value corresponding to ~~the~~ a saturation level on ~~the~~ an output side of said dark output correction ~~means~~" means by (ii) a difference between "~~a~~ a value corresponding to ~~the~~ a saturation level on ~~the~~ an input side of said dark output correction ~~means~~" means and "~~the~~ a maximum value of the dark output level detected by said dark output level detecting ~~means~~" means.

13. (Currently Amended) The imaging apparatus according to claim 12, wherein the value of the effective gain set by said

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dark output correction means is not smaller than ~~the~~ said

resultant value ~~of the above division~~.

14.   (Original) The imaging apparatus according to claim 13,
wherein the value of the effective gain set by said dark output
correction means is controlled in a stepwise fashion.

15.   (Currently Amended) The imaging apparatus according to
claim 12, wherein the value of the effective gain set by said
dark output correction means is equal to ~~the~~ said resultant value
~~of the above division~~.

Claims 16-20 (Canceled).

21.   (Currently Amended) ~~The~~ An imaging apparatus ~~according
to claim 19,~~ comprising:
    an imaging device which includes a plurality of pixels
arranged two-dimensionally, and which outputs an imaging signal;
5   dark output level detecting means for detecting, for each of
the plurality of pixels, a dark output level superposed on the
imaging signal;
    dark output correction means for correcting the imaging
signal based on the detected dark output level, and for setting a

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10   <u>clip level and an effective gain for the corrected imaging</u>

<u>signal, based on the detected dark output level; and</u>

<u>test imaging means for capturing a test image by performing</u>

<u>a charge storage and readout operation of said imaging device for</u>

<u>a test imaging time while shielding said imaging device from</u>

15   <u>exposure;</u>

<u>wherein the dark output level detection means detects the</u>

<u>dark output level by deriving a dark output level of an actual</u>

<u>imaging based on said test imaging time, an imaging device output</u>

<u>level obtained by said test imaging means, and a charge storage</u>

20   <u>time for exposure control of the actual imaging; and</u>

wherein the test imaging time and the charge storage time ~~at~~

<u>of</u> the actual imaging ~~time~~ are different from each other<u>,</u> and the

dark output level ~~at~~ <u>of</u> the actual imaging ~~time~~ is derived by

multiplying the imaging device output level X obtained by said

25   test imaging means by a ratio Y/Z of the test imaging time Y of

said test imaging means to the charge storage time Z for exposure

control at the actual imaging time.

22.   (Currently Amended) The imaging apparatus according to

claim 21, wherein the test imaging time is shorter than the

charge storage time ~~at~~ <u>of</u> the actual imaging ~~time~~.

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23.   (Currently Amended) ~~The~~ An imaging apparatus ~~according
to claim 17,~~ comprising:

an imaging device which includes a plurality of pixels
arranged two-dimensionally, and which outputs an imaging signal;

5   dark output level detecting means for detecting, for each of
the plurality of pixels, a dark output level superposed on the
imaging signal; and

dark output correction means for correcting the imaging
signal based on the detected dark output level, and for setting a

10   clip level and an effective gain for the corrected imaging
signal, based on the detected dark output level;

wherein a value of the effective gain set by said dark
output correction means is determined based on a resultant value
obtained by dividing "~~a~~ (i) a value corresponding to ~~the~~ a

15   saturation level on ~~the~~ an output side of said dark output
correction ~~means"~~ means by (ii) a difference between "~~a~~ a value
corresponding to ~~the~~ a saturation level on ~~the~~ an input side of
said dark output correction ~~means"~~ means and "~~the~~ a maximum value
of the dark output level detected by said dark output level

20   detecting ~~means"~~ means.

24.   (Currently Amended) The imaging apparatus according to
claim 23, wherein the value of the effective gain set by said

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dark output correction means is not smaller than ~~the~~ said

resultant value ~~of the above division~~.

25.   (Original) The imaging apparatus according to claim 24,
wherein the value of the effective gain set by said dark output
correction means is controlled in a stepwise fashion.

26.   (Currently Amended) The imaging apparatus according to
claim 23, wherein the value of the effective gain set by said
dark output correction means is equal to ~~the~~ said resultant value
~~of the above division~~.

Claim 27 (Canceled).

28.   (Currently Amended) An imaging apparatus comprising:
       an imaging device ~~having~~ which includes a plurality of
pixels arranged ~~in a two-dimensional fashion~~ two-dimensionally,
and which outputs and imaging signal;
5   dark output level detecting means for detecting, for each of
the plurality of pixels, a dark output level ~~for each pixel~~
superposed on ~~an~~ the imaging signal ~~which is an output signal of
the imaging device~~;
       dark output correction means for correcting the imaging
10   signal by eliminating a dark output component from the imaging

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signal for <u>said</u> each pixel based on the <u>detected</u> dark output

level ~~detected by said dark output level detecting means~~, <u>for</u>

setting a clip level for the corrected imaging signal ~~according~~

~~to the~~ <u>based on a</u> maximum value of the <u>detected</u> dark output

15   level<u>,</u> ~~detected by said dark output level detecting means~~ and <u>for</u>

setting an effective gain for the corrected imaging signal

~~according to~~ <u>based on</u> the set clip level; and

     exposure correction means for correcting exposure of said

imaging device ~~according to~~ <u>based on</u> the <u>set</u> gain ~~setting in said~~

20   ~~dark output correction means~~.

     Claim 29 (Canceled).

     30.   (Currently Amended) An imaging method comprising ~~the~~

~~steps of~~:

     imaging a subject ~~by use of~~ <u>with</u> an imaging device which ~~has~~

<u>includes</u> a plurality of pixels arranged ~~in a two-dimensional~~

5   ~~fashion~~ <u>two-dimensionally, and which outputs an imaging signal</u>;

     detecting<u>, for each of the plurality of pixels,</u> a dark

output level ~~for each pixel~~ superposed on ~~an~~ <u>the</u> imaging signal

~~obtained by imaging the subject~~;

     correcting the imaging signal based on the detected dark

10   output level;

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      setting a clip level for the corrected imaging signal

~~according to~~ based on the detected dark output level;

      setting an effective gain for the corrected imaging signal

~~according to~~ based on the set clip level; and

15   controlling exposure of the imaging device according to the

set gain.

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